



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE PREPARATION OF ESTIMATES AND THE FORMULATION OF THE BUDGET—THE NEW YORK CITY METHOD

BY TILDEN ADAMSON,

Director, Bureau of Contract Supervision, City of New York.

Because of the peculiar problems in New York City, its budget and its budget making methods are more complex than would be necessary in the average American city. Nevertheless, some description of the New York method of securing estimates of departmental needs, formulating the budget, and checking expenditures should prove of value to other cities.

As an appropriation bill, the New York City budget for 1915 authorized the expenditure of \$198,989,786.52. This amount, however, is only the so-called tax levy portion of the budget. In addition to this the budget provides a control over expenditures of millions of dollars other than funds raised by tax levy or by city revenue.

Up to a few years ago the budget comprehended only appropriations for current administration, operation, and maintenance. Today, it covers or controls all appropriations except bond issues for the development of the Catskill water supply and the building of the subway. Not all of these appropriations are actually made in the budget, but the original function of the budget has been expanded to give what is believed to be a necessary control over expenditures from corporate stock and special revenue bond funds. The expenses of administrative operation and maintenance are borne chiefly by funds appropriated in the budget and raised by tax levy. This is supplemented by city revenue from various sources and in cases of deficiency by special revenue bonds which are redeemed in the budget of the year succeeding the year of their issue. The expenses of constructing necessary improvements are borne by the proceeds of bonds known as corporate stock or by assessment upon the owners of property benefited by public improvements.

Until six or seven years ago no one thought of corporate stock funds and the tax levy budget as having any relation. This was a strange blindness on the part of city officials because even as early as 1909 the interest, redemption, and installment on the city debt amounted to \$47,223,078.33. This amount had to be appropriated in the budget. By a singular oversight no one in authority seemed to regard it as necessary to place a restriction upon the issue of corporate stock or long term bonds. Their point of view was that a future generation would have to redeem the bonds. They overlooked the fact that every year they were adding millions to the budget in the form of interest and redemption. About 1910 the rapidly growing tax-budget compelled the attention of city officials. Since that time the lesson has been gradually learned that the annual tax appropriations cannot be controlled unless control is exercised also over expenditures from bond funds.

The segregated form of budget was largely responsible for directing attention to the grave danger from uncontrolled bond appropriations. A comparison between uncontrolled expenditures out of corporate stock and the controlled expenditures out of tax levy emphasized the necessity of a control over all funds.

The budget now in force has four chief purposes, as follows:

1. It determines and appropriates the amounts to be expended for each and all the various objects of governmental activity chargeable to tax levy.
2. It controls by schedules, terms and conditions the expenditure of funds other than tax levy.
3. It provides by segregation, by titles of appropriations, by terms and conditions and by schedules for the control of tax levy appropriations so that they will be expended economically for the necessary purpose of the appropriation.
4. It serves as a document of publicity by informing city officials, city employees and taxpayers of the amounts and the objects of the various appropriations and it charts in simple form the positions, titles, and salaries provided for each function of governmental activity.

The budget of New York City not only appropriates but guides the expenditure of the appropriations. Its scheduled form of detailed appropriation makes it well nigh impossible for department heads to misuse funds or to expend funds wastefully.

But the greatest improvement in budget making in this city in the last five years has not been in the form of the budget itself but chiefly in the methods of gathering facts to be used as a basis for budget making. Under the old method, department heads

would send in their estimates as required by law and just before October 31 there would be a more or less perfunctory examination. In no case was there a thorough inquiry made into the needs of a department. The result was that appropriations were not based on actual necessities.

During the last five years an attempt has been made to develop a budget system based on fundamental facts. Without facts as a basis no improvement can be made in administrative methods and no intelligent or effective control of municipal activities can be exercised by the board of estimate and apportionment which in New York is the controlling body. With this in mind we have attempted to gather facts and present them in such form that they can be applied with best effect to problems of the city government.

A full description of our machinery for gathering budget data would be lengthy. Departmental estimates are prepared on forms based on the theory that the main duty of the budget maker is to ascertain the amount of money that should be appropriated and not to ascertain, as was done in the old days, simply the amount that the department head wants to have appropriated. This is a very difficult task in a city with great departments, each with many and varied functions.

Our problem deals naturally with seven simple essential elements, as follows:

1. Work.
2. Workers.
3. Rate of pay.
4. Tools.
5. Supplies.
6. Materials.
7. Prices of tools, supplies, and materials.

The following elaboration and extension of these seven simple factors expresses perhaps more fully the chief things to be considered.

1. Number of units of work to be done.
2. Classes of employees necessary to do the work.
3. Number of units of work to be done by each class of employees.
4. Number of units of work the average employee of each class ought to perform in a day.
5. Number of days of work for each class of employee.
6. Rate of compensation for each class of employee.

7. The kind, quality, and quantity of supplies, materials, and equipment necessary for the performance of the work to be done.

8. Lowest market prices for all the kinds of supplies, materials, and equipment.

9. The best methods of performing the work.

An intelligent coördination of all these facts forms the soundest basis not only for budget appropriation, but for departmental administration.

The department head who knows the volume of work he has to do, the classes and the number of employees necessary, the proper rate of compensation, the kind and quantity of supplies, materials, and equipment and their lowest market prices, has a simple task. If we can give him these facts it will not be necessary to show him how to do the work. The labor involved in this apparently simple problem is tremendous. In addition to a study of the work performed by many thousand employees, there must be an investigation into all the needs of the various departments for funds to operate and maintain city property.

The first and most important fact we have to ascertain is the volume of work to be done. This cannot be determined in all cases upon departmental estimate forms but requires a detailed study by engineers and examiners. However, our forms are devised to obtain information showing the volume of work to be done wherever it can be conveniently expressed. We then try to express this work in standard units of measure and to classify it according to the nature of the thing to be done. For instance, on the forms for the "Maintenance of Highways" we endeavor to ascertain, among other things, the approximate number of square yards of sheet asphalt with a wearing surface of a given thickness that will have to be replaced in the coming year. On our "Forage" forms we ascertain the number of horses that will have to be fed in the coming year, the quantity of oats, the quantity of hay, and the quantity of straw and other supplies used, the unit cost of each kind of supply, and the daily per capita cost of feeding horses of each class or occupation. A careful classification is necessary, as, for instance, horses used in the fire department and working only occasionally do not require such heavy feeding as the big horses used in the street cleaning department which are usually overworked.

In the last few years there has been a determined effort to

supersede the present scheduled budget with a so-called cost data budget. The chief advantage that has been urged for the cost data budget is that it provides a work program. This form of budget is still being urged but not by anyone who has an intimate practical knowledge of the requirements of the budget. For four years an experimental cost data budget has been made for the Borough of Richmond. This budget has proved a failure and is to be abandoned next year at the request of the Borough President. A report, made September 25, shows an over-expenditure of almost 20 per cent in the highways appropriation in the Borough Richmond, in the first three quarters, leaving a deficit of the same amount in the last quarter. As there was no control in this cost data budget, the money that should have gone into road materials was to a large extent used for salaries, wages, and the unnecessary employment of teams.

The main weakness of the cost data budget is that it fails to control expenditures, and its work program is actually not so intelligent or comprehensive as the work program that forms the basis for a scheduled budget in New York City. Emphasis should be put upon the fact that the schedule budget is a work program cost data budget. A work program is essential as a foundation for any intelligent budget, but to this work program we apply cost data after determining what cost data are proper. The so called work program budget does not analyze cost data but accepts and applies the costs of this year as fixing the proper costs for the same things next year.

The unit cost of a thing done does not always represent the proper cost. In order to get the proper cost, it is necessary to obtain the unit price of the various elements of labor, supervision, supplies, material, and equipment, entering into the thing done. It is this necessity which governs the forms on which departmental estimates are prepared. An example of the weakness of the usual cost data is shown by the cost per square yard for certain paving work done by five different gangs under different foremen. I have in mind a single day's work for these gangs. The work to be done was identical yet the cost ranged from \$1.11 per square yard to \$1.89. This cost data was worthless on its face because it did not analyze the cost into the constituent elements. It accepted the compound unit cost as final. By going back of the unit cost per

square yard we find the reason for the difference in cost for doing the same thing under similar conditions. We base everything on elemental cost data. By this is meant the unit cost of each element that enters into the performance of a thing as, for instance, the laying of a square yard of asphalt pavement. The fact that it costs only \$1.70 for laying a square yard of asphalt pavement is absolutely useless and misleading information unless we know all the facts entering into the cost of laying the pavement. An offhand summary of the various elements to be considered in comparing the cost of asphalt pavement is as follows:

1. Number of linear feet of old curb removed and cost of same.
2. Number of linear feet of new curb set.
3. Number of basins and heads adjusted and cost of same.
4. Character of surface to be stripped and cost of stripping.
5. Character and quantity of foundation to be stripped and cost of stripping.
6. The quantity and cost of adjusting to grade.
7. Cost of rolling of sub-grade.
8. The thickness of new foundation.
9. The proportions of concrete mixture used in the foundation.
10. The thickness of wearing surface.
11. The quality of asphalt.
12. The cost of asphalt.
13. The quality of asphaltic cement.
14. The cost of asphaltic cement.
15. The proportions of asphaltic mixture.
16. The cost of the broken stone.
17. The cost of sand.
18. The cost of cement.
19. The distance of transportation of material.
20. The cost of transportation.
21. The cost of heating materials.
22. The cost of labor.
23. The cost of supervision.
24. The extra cost of maintaining traffic without interruption.
25. The area of work done.
26. The conditions under which the work must be done.
27. The time limit for the completion of the work.
28. The cost of guarantee.
29. The character of traffic that the pavement will have to bear as a means of determining the cost of guarantee.
30. The local conditions affecting the performance of the work.

This looks like a formidable list but, even so, probably three or four elements of cost have been overlooked.

The fact is that one square yard of asphalt may be cheap at \$2, while another square yard may be high priced at \$1.

Another trouble with compound unit cost data is that it compares entirely dissimilar things with each other. For instance, I have seen comparisons between things as dissimilar as the following:

1. The cost of laying a square yard of asphalt pavement on a 6-inch foundation of the richest mixture of concrete with a 3-inch wearing surface of the best mixture and finest quality of asphaltic material laid under the most exacting conditions in a crowded section of the city where trolley and vehicular traffic must be maintained without interruption and where the work must be done in one-half the usual time.

2. The cost of laying a square yard of asphaltic pavement on a 3-inch foundation of the thinnest mixture of concrete with a wearing surface of less than 2 inches of poor asphalt materials laid under the most favorable conditions within a short distance of an asphalt plant with no vehicular traffic or trolley to be maintained or with no exacting time requirements.

This is just as bad as comparing the moon with a radish. The number of square yards to be done has a marked effect upon the unit cost per square yard and the conditions under which the work is done will have an even more marked effect. For instance, a contractor can lay 10,000 square yards of pavement straight away the full width of a street at a much lower price than he can lay 10,000 square yards of pavement on exactly the same street when he is compelled to pave one side of the street while keeping the other side open for traffic.

Moreover, it is essential to a fair comparison that the unit cost of compounds be analyzed into simple elements. If the Health Commissioner receives a report from hospitals showing that in each the daily per capita cost of feeding, treating, and caring for patients is \$2.10, the very uniformity of the unit cost might convince him that \$2.10 was the proper price. Suppose, however, that, instead of receiving the report of the compound unit cost, the commissioner receives a separate report showing the daily per capita cost of feeding patients, the quantity in pounds of food consumed, the quantity of each article of food consumed, and the cost of each separate element of supplies or service. He might find that in one hospital the cost of feeding patients was 45 cents per day per capita, whereas in another hospital caring for exactly the same class of patients, the price was only 19 cents per day. It might be found also on investigation of these reports that the patients fed for 19

cents per day were supplied with better and more nourishing food than the patients fed at the higher cost. The commissioner might then, by comparison of the elemental costs, find low prices for each element and by insisting upon this cost as the standard in all hospitals be able to cut the compound unit cost in half. This is not an entirely supposititious case.

The first year we used budget accounting forms on food supplies we found the daily per capita cost for food ranging from 8 cents up to \$1.20. We found that patients or inmates who were being fed at 30 cents a day were receiving better food in some cases than inmates or employees whose daily per capita cost for food was several times as high. The result was the elimination of many luxuries and a vast saving to the taxpayers. I believe the Commissioner of Correction states that the inmates of institutions under her care are being fed better now on a 16 cent per capita basis than when the per capita cost was much higher. We would never have been able to accomplish any reform in the food supplies if we had not insisted upon getting the daily per capita consumption of all kinds of food. This form of budget accounting points a finger directly at strawberries in January or fresh asparagus at Christmas time. It also shows up the departmental employees when they take the choicest steaks for themselves and leave the poor meat for patients. The great amount of detailed information required on food supplies has been criticized but the tremendous results accomplished have more than justified the method. Not only has there been a very large saving annually but there is now an assurance that patients such as those who suffer from tuberculosis will receive plenty of the most nourishing foods whereas under the old conditions no one seemed to realize that there should be a distinction between the per capita cost of food consumed in a scarlet fever hospital and the per capita cost of food consumed in a tuberculosis hospital.

Going back to the seven simple elemental factors to be considered in budget making, I will use as an example the Otisville Sanatorium, an institution for the care of tuberculosis patients. Our departmental estimate forms show the number of patients to be treated, the number of horses to be fed and the repairs, replacements and other work necessary for the maintenance of the institution. With this as a basis for the work program we determine the number

of workers, that is, the number of nurses, physicians, internes, hospital helpers, drivers, foremen, carpenters and other employees necessary to make the work program effective.

The determination of the number of workers necessary is based upon the volume of work to be done and the number of units of work the average employee of each class ought to perform in a day. With these facts we can determine the number of days' work for each class of employees. The rate of compensation for each class and grade of employees is the next step. In determining this rate we apply standard work specifications which form a part of the general program of the standardization of salaries and grades.

Tools or equipment must be considered in connection with the volume of work and the number of the workers. Our departmental estimates do not permit departments to request simply a lump sum for equipment but require a detailed statement of each kind of equipment. The request is always considered in its relation to the number of workers. The departmental estimate forms provide against waste and over-stocking by a system of inventory and a statement of stock on hand.

The question of the quantity of supplies for the ensuing year depends absolutely upon the work program. For instance, the quantity of food supplies depends upon the number of persons to be fed, the quantity of motor vehicle supplies depends upon the number of automobiles or the mileage, and the quantity of forage supplies depends upon the number of horses and the class of horses to be fed.

Experience has taught us that we cannot make a lump sum appropriation for supplies. Patients used to go hungry in hospitals because money that had been appropriated for food supplies under a general heading of "Supplies and Materials" was actually spent to buy Persian rugs and automobiles. We have found it necessary to control such expenditures by classifying the various forms of supplies and making appropriations as follows:

- Food Supplies.
- Forage and Veterinary Supplies.
- Fuel Supplies.
- Office Supplies.
- Medical and Surgical Supplies.
- Laundry, Cleaning and Disinfecting Supplies.
- Refrigerating Supplies.
- Educational and Recreational Supplies.

Botanical and Agricultural Supplies.

Motor Vehicle Supplies.

General Plant Supplies.

This sub-classification serves not only to control the expenditure of appropriations but makes it easier to analyze departmental requests. There is a form of departmental estimate for each class of supplies and a complete statement with supporting data must be made with every request.

The same principle of subclassification is applied to materials which have been classified as follows:

Highway Materials.

Sewer Materials.

Building Materials.

General Plant Materials.

This insures that materials appropriated for the repair of highways will be used for that purpose instead of being diverted to materials for laying parquet floors in the offices of commissioners or for other purposes that are not necessary.

In like manner it has been found necessary to subdivide the grand division of equipment into nine subdivisions as follows:

Office Equipment.

Household Equipment.

Medical and Surgical Equipment.

Live Stock.

Motorless Vehicles and Equipment.

Motor Vehicles and Equipment.

Wearing Apparel.

Educational and Recreational Equipment.

General Plant Equipment.

The desirability of separating appropriations for equipment into these subdivisions may be illustrated by the fact that money appropriated for hospital "equipment" and intended for operating tables has been used to buy pianos and billiard tables for persons connected with the hospital.

Formerly there was no distinction in the budget between supplies, equipment and materials. In order to make the budget classifications susceptible of practical application it was necessary to make arbitrary definitions. These definitions and the classifications were intended to compel all articles to fall naturally into their proper places. The definitions are as follows:

Supplies: Supplies are articles which can be used but once, or which, after being used once, show a material change in or an appreciable impairment of their physical condition.

Equipment: Equipment includes all apparatus, machinery, vehicles, tools, instruments, furniture, fittings and other articles which can be used over and over again without a material change in or an appreciable impairment of their physical condition.

Materials: Materials are articles and substances in a natural or manufactured state entering into the construction or repair of any building, highway, sewer, apparatus, machinery or other equipment.

The importance of the distinctions is illustrated forcibly in our budget work. The fact that a power plant used 10,000 tons of coal in 365 days of one year indicates that unless there has been some change in conditions, the same quantity of fuel supplies will be required in the following year. This is true of practically all supplies while the reverse is true of equipment. When the departmental estimate forms show that 800 beds were purchased last year for a hospital with an 800 bed capacity, that on its face shows the Budget Committee that there should be no need for the purchase of 800 beds the next year. The failure to make these distinctions in the past was responsible for inflated appropriations that were wasted.

In addition to the several classifications already mentioned we have special departmental estimate forms for the Contract or Open Order Service, as follows:

- General Repairs.
- Motor Vehicle Repairs.
- Light, Heat and Power.
- Janitorial Service.
- Transportation.
- Communication.
- General Plant Service.
- Lighting Streets and Parks.
- Lighting Public Buildings.
- Power.
- Heat.
- Hire of Horses and Vehicles with Drivers.
- Hire of Horses and Vehicles without Drivers.
- Storage of Motorless Vehicles.
- Storage of Motor Vehicles.
- Shoeing and Boarding Horses, including Veterinary Service.
- Hire of Automobiles.
- Carfare.

Expressage and Deliveries.
Telephone.
Telegraph, Cable and Messenger Service.
Contingencies.

Another advantage of the detailed accounting required on the departmental estimate forms is that it shows up departmental sore fingers prominently. When this system of budget accounting was first installed, the head of a certain department was amazed to find that one division in his department was buying kerosene oil at $7\frac{1}{2}$ cents a gallon while another division was buying kerosene oil by the pound at a price of 28 cents. This same department found that one division was paying three or four times as much as other divisions for its engine oils.

The first year of the operation of these forms a certain big department filled out its estimates on the old fashioned basis. The department was required to analyze its request in accordance with the new form. This analysis resulted in showing that the department had deliberately padded its requests by 50 per cent in some divisions and by 25 per cent in others. The required analysis as made by the department itself showed requests for $2\frac{1}{2}$ bicycles, $12\frac{1}{2}$ thermometers, and $1\frac{1}{2}$ wheelbarrows. The very absurdity of these requests served to establish firmly the new system of making departmental estimates. Since that time as a result of these methods the budget of this same department has been reduced almost two million dollars notwithstanding a very large growth in the main functions of the department.

The results to be obtained from a thorough and scientific system of budget making are illustrated by the fact that in making the 1915 budget a comparatively small group of men engaged upon only thirteen of the one hundred and twenty departments and offices reduced the aggregate budget of these thirteen departments approximately \$4,000,000 below the 1914 schedule. One of these thirteen departments had in 1914 a budget of approximately \$4,000,000. By a thorough study and reorganization of this department and by the application of proper methods of work performance we were able to reduce the budget for 1915 by about one and one half million dollars. The commissioner of the department in question insisted that this would ruin his department. The form of departmental estimate used and the method of investigation followed showed so

convincingly the vast waste in this department that despite the very radical recommendations and despite the commissioner's protest, the budget was cut almost in half. Instead of ruining the department there was an actual improvement. The department has done better work this year than for many years in the past and the commissioner himself has requested for 1916 less than half the 1914 appropriation.

Another instance of the New York method of making the budget is given by the appropriation for lighting public streets and public buildings. Year after year it has been necessary to authorize revenue bonds to meet deficits in the lighting appropriation. This appropriation had increased from year to year until it was approximately \$5,000,000 in 1914. We made a physical examination of lighting conditions and investigated the size, character and location of every street light in the city. The result was a saving of almost \$700,000 in the budget for 1915 and an increase of almost 20 per cent in illumination. This was done largely by replacing old fashioned gas lamps and costly arc lights with improved nitrogen and tungsten lights. This year the same methods are expected to reduce the budget for lighting by approximately \$300,000 or a total reduction of about \$1,000,000 in two years.

The greatest difficulty with which we have had to contend has been the general belief that the head of a department knows more about this department than budget examiners. After several years of repeated proof that intelligent and expert examiners who have given close and detailed study to conditions had a better knowledge than commissioners who rarely understand the detail working of their departments, we have at last succeeded in having the budget considered on the basis of facts rather than on that of the opinions of department heads. In preparing the budget we try to introduce in all departments methods that have demonstrated their superiority. One advantage that a centralized force of examiners has over department representatives is that they are in a position to witness the activities of all departments, to contrast the good with the bad and to make profitable use of the mistakes of one department and the high accomplishments of another.

The departmental estimate forms are so devised that current comparisons can be made between departments and between divisions of departments, and the best methods selected. The depart-

mental estimates themselves form what might be considered a negligible part of the work of budget making. With the departmental estimates as a working basis it is necessary for the examiners and engineers to make a very close study of the organization and the work of the departments. This requires considerable tact. We keep in mind always that the departmental engineer who has been building sewers for twenty five years knows the duties of his position probably as well as we know our own but we endeavor tactfully to show him that there are other engineers building sewers and repairing highways with better results at less cost.

The departmental estimates are prepared usually by clerks of the various divisions. These clerks use as a basis for their request the estimates given them by heads of bureaus, heads of divisions, engineers, foremen, and others. The experience data are taken from the records of the department.

Estimates are required by law to be submitted to the Board of Estimate and Apportionment on or before September 10. The final budget must be made on or before October 31. There is such a short time between September 10 and October 31 that it would not be possible to gather all the essential facts to prepare recommendations, hold hearings and print the budget in that time. Accordingly it is necessary to make the budget work continuous throughout the year. Examiners and engineers are already familiar with conditions in departments when the estimates are received. They proceed immediately to apply their knowledge of conditions and to analyze the requests. Usually the examiners go over every item with representatives of the departments and then write in their recommendations in the proper column on the estimate forms.

After the estimates have been analyzed, recommendations are made and a summary placed upon forms known as "committee sheets." These committee sheets carry complete comparative data concerning every account to be considered. On these sheets reasons are given for the various recommendations.

Hearings on the budget are held and the committee sheets are given to the members of the Budget Committee to assist them in a better and quicker understanding of the recommendations than otherwise would be possible. The argument of the department representatives is heard and in cases of disagreement the facts are discussed thoroughly by the committee. After the completion of

committee hearings on all departments a tentative budget is printed and a public hearing held to consider this tentative budget as a whole. Representatives of the various civic associations, taxpayers' associations and others usually appear and argue for and against certain appropriations. If the arguments at the public hearings convince the members of the board of estimate and apportionment that the tentative budget should be changed in any particular the change is made, and, then, after a very careful checking as to the accuracy of the budget, it is adopted and signed on October 31.